INSTRUCTIONS FOR OPERATION & MAINTENANCE OF RIVETT 1020F AND 1030F PRECISION TOOLROOM LATHE

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MODEL NO. _____

SERIAL NO._____

WHEN ORDERING REPLACEMENT PARTS PLEASE GIVE:

MODEL AND SERIAL NO.

DRAWING NO. AND PART NO.

RIVETT LATHES & GRINDERS

MANUFACTURED BY LELAND GIFFORD COMPANY

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LATHE ASSEMBLY - Print 1020S With reference nos.

OPERATOR'S INSTRUCTION MANUAL

INTRODUCTION

The 1020F precision toolroom lathe qualifies for the finest metal turning in any toolroom, experimental shop or laboratory. Lasting quality has governed the design and selection of material throughout the lathe. The nature of the lathe should be recognized and every care be taken to maintain its original accuracy and appearance. The wide use of anti-friction bearings, automatic lubrication hardened and ground bed-ways and safety interlocks greatly simplify the maintainance.

The 1020S precision toolroom lathe is built from unit assemblies which greatly simplify service and repair. The headstock is an integral assembly and may be removed from the bed-ways. The gear box is an integral assembly and may be removed from the bed enclosure. The drive is an integral assembly and may be removed from the base casting. All parts in the lathe are manufactured to close tolerances and may be replaced without fitting.

The installation, operation and maintainance instructions are made with reference to assembly drawings to clarify the description. At times further information may be required which will gladly be furnished on written request. When writing it is suggested that the serial number of the lathe be included; this information can be taken from the serial number plate mounted at the front right end of the lathe bed.

INSTALLATION INSTRUCTIONS

RECEIVING AND UNPACKING

If any damage is noticed to packaging, machine or parts call representative of delivering carrier to inspect condition before removing crate or taking parts from boxes and enter claim against the transportation company. The shipper holds receipt in good order for the entire consignment.

Carefully unpack, using nail puller for removing crate, box covers and braces. Avoid jarring machine when doing this. Leave the machine mounted on the skid until it has been finally located. Check all items against packing list. If any shortage exists, re-examine packing material before discarding. Small pieces may easily be lost unless all excelsior and wrapping paper is thoroughly overhauled. Immediately report any shortage or discrepancies.

Remove slushing grease using fresh cotton waste or cloth with gasoline or kerosene. Immediately go over all ground, polished and scraped surfaces with an oily rag.

FOR REFERENCE NUMBERS SEE PRINT 1020F

SETTING UP (dwg. 1020S or 1030 M & S)

Machine should be close to its location on its skid; remove wooden clamps from skid and slide lathe off skid using rollers. Lifting hooks can be used on headstock end of base, remove panel #34 to expose lip for lifting hooks. Place machine on concrete or solid foundation.

Level machine using precision level lengthwise and crosswise on bedways. Lengthwise the level should be tested at both the headstock and tailstock ends of eash flat surface. Crosswise the level should rest on two precision parallels each mounted on the flat surfaces of the bedways; the parallels should be of sufficient thickness so the level clears bedway vees. Level directly in front of the headstock and at the extreme tailstock end. Four levelling jacks with jack pads provide adjustment and eliminate the necessity of shims. All readings on level should be within .0005" per foot.

ASSEMBLING

1. Release carriage from bedway by relieving binder stud #13
2. Install draw-in spindle #2 if collets are to be used.
   When not in use draw-in spindle fits in hole provided in collet board on top of tool cabinet.
3. Install dial indicator #11 on bracket at left end of carriage.

WIRING

Machine is wired in accordance with wiring diagrams located on the inside of the electrical panel door. Before connecting lead wires to terminal box at left-rear of lathe base, be sure that disconnect line switch #16 on electrical compartment door is in OFF position. Connect lead wires per wiring diagram; be sure leads are connected so that lathe spindle turns counter-clockwise when FORWARD push button #25 is depressed.

Pilot light #17 indicates when disconnect line switch is in ON position and power is available to the drive.

INITIAL OILING

Headstock, gear box and carriage are self-lubricating. Check the oil level in the gauge glass provided on each assembly and if the oil is not to proper level follow instructions under lubrication. Page 7 and lubrication chart 102OL.. Carriage automatic lubrication also lubricates the bedways.

Tailstock is provided with three oil cups one for each of the bedways and one for the spindle. Those oil cups should be filled with SAE-20 lubricating oil.

FILLING COOLANT SYSTEM (optional)

The coolant tank mounts on slideway inside door at the rear of the machine base. To remove the tank from base first lift the drain tube in the sump of the machine base and then remove screws on the door. The coolant reservoir can be filled through the drain stand-pipe. The maximum capacity of the coolant tank is six gallons.

The coolant pump is driven by a vertically flange-mounted motor controlled by push-buttons #18 on the front of the base.

OPERATION INSTRUCTIONS

MAIN DRIVE

The drive consists of a 5 H. P. U. S. Varidrive Motor and countershaft with multidisc clutch to select one of two drives to the headstock. The main drive motor is controlled by Forward, Reverse, and Stop push buttons at the front of the lathe #25, #26 and #27. The Vari-pitch sheave on the output shaft of the motor belt drives a self adjusting vari-pitch sheave on the countershaft. A small geared motor is used to vary the pitch of the countershaft. A small geared motor is used to vary the pitch of the sheaves. The push-buttons marked FAST AND SLOW at the front of the lathe #29 and #28 control the output speed of the drive. The speed of the lathe spindle indicated on the tachometer #7, may be changed to any desired speed by operating the FAST or SLOW push-buttons. Speed changes cannot be made unless main drive motor is running. The countershaft has two output driving sheaves, one for driving the headstock spindle in open belt and one for driving the headstock spindle in back gears. The selecting clutch is operated by lever #33 with three positions OPEN BELT - NEUTRAL - BACK GEAR.

HEADSTOCK

The spindle may be driven by direct belting or through back gearing. Two sets of back gearing are used to provide a spindle speed range from 22 to 400 rpm. Lever #6 on the front of the headstock selects the spindle drive; it has three positions OPEN BELT - 1st BACK GEAR - 2nd BACK GEAR - with neutral between each. To drive the spindle through back gears, lever #33 operating the countershaft should be positioned in BACK GEAR and the control knob #6 on the headstock should be positioned in either 1st BACK GEAR for speeds from 44 to 400 rpm or in 2nd BACK GEAR for speeds from 22 to 200 rpm. To drive the spindle through open belting the lever #33 controlling the countershaft should be in position OPEN BELT and the control knob #6 on the headstock should be positioned in OPEN BELT. The spindle may be stopped by moving the lever #33 controlling the countershaft to NEUTRAL or by pushing the STOP push button #27. The main drive motor stops instantaneously by action of integral motor brakes. To lock headstock spindle when mounting spindle nose attachments, engage knob #6 in back gear position.

For Reference Numbers See Print 1020F

SPINDLE NOSE ATTACHMENTS

These mount on long taper key drive spindle nose, American St'd #L0. Locking Nut #9 is turned clockwise to draw-up and lock face plates, jaw chucks or other attachments to the keyed long taper of the spindle nose. A spanner wrench is provided and may also be used for tightening draw-in spindle.

COLLETS

Rivett 6R draw-in type collets with round hole capacity up to 1-1/8" mount directly in the spindle mouth and are operated by draw-in spindle or by lever chuck closer if furnished.

GEAR BOX

The mechanism is driven through gearing from the headstock controlled by knob #8 on the front of the headstock. This knob has three positions; FEEDS - NEUTRAL - THREAD. When the Gear Box is used for power turning this lever is located at FEEDS. When the gear box mechanism is used for threading this lever is located at THREAD. When the gear box mechanism is not required this lever is located at NEUTRAL.

TO SELECT FEEDS

1. Turn control knob #8 to feeds position.
2. Note setting of gear box controls for desired feed from chart #37 on front of gear box.
3. Turn selecting locking lever #31 counter-clockwise to neutral detented position.
4. Turn selector dial #32 to match desired number with pointer.
5. Turn selector locking lever #31 clockwise as far as it will go to lock selector dial.
6. Turn control knob #35 to A1, A2 or A3 position as indicated by chart.
7. Turn control knob #36, to B1, or B2 position as indicated by chart.
8. Turn control knob #30 to R.H. for power longitudinal feed, in this position the feed rod will drive the carriage from right to left with the headstock spindle running counter-clockwise.
9. Turn control knob #30 to L.H. for power cross feed, in this position the feed rod will drive the cross slide in to reduce stock diameter

1. Drive headstock spindle at proper speed.
2. Turn control knob #8 to THREAD position.
3. Note setting of gear box controls for desired thread from chart #37 on front of gear box. If desired thread is not on chart see Instructions for special English or Metric Threads. Page 6.
4. Turn selector locking lever #31 counter clockwise to neutral detented position.
5. Turn selector dial #32 to match desired number with printer.
6. Turn selector locking lever #31 clockwise as far as it will go to lock selector dial.
7. Turn control knob #35 to A1, A2 or A3 position as indicated by chart.
8. Turn control knob #36 to B1 or B2 position as indicated by chart
9. Turn control knob #30 to R.H. for right hand threading or to L.H. for left hand threading.

CARRIAGE

Carriage locks to lathe bed by stud #13. Lathe is shipped with carriage in locked position. Be sure to release the carriage when setting-up lathe. Test free movement of carriage by using handwheel #24. ~~Clutch #23 may be pulled to release handwheel from gear train.~~ Be sure stops #19 are not locked to stop rod to interfere with desired carriage travel.

Lever #22 on front of lever operates clutch for power longitudinal feed. Horizontal position is neutral and lever may be moved up or down for engaging clutch.

Lever #21 on front of apron operates clutch for power cross travel. Horizontal position is neutral and lever may be moved up or down to engage clutch. Control knob #30 must be in L. H. position for power infeed.

Lever #15 engages the half-nuts with the lead screw for threading operations. An interlock prevents engagement of the half-nuts and the power longitudinal feed at the same time.

COMPOUND AND CROSS SLIDE

The screws have dials graduated in thousandths of radius. The swivel is graduated 180 either side of zero and is locked in position by two binder nuts. The cross slide may be locked by clamping nut located to the rear of the compound.

The cross slide feed screw has adjustable ball stop for retracting and resetting threading tool without losing the micrometer reading. The ball stop is locked in position by knurled screw #12. This provides a positive stop and limits the revolution of the cross slide feed screw to three turns.

THREADING DIAL

The dial mounts on the face of the carriage apron indicated by #14. Threads with the lead divisible by six do not require the use of the threading dial as the half-nuts may be engaged at any point. For all other even whole threads, the half-nuts may be engaged on any number of the threading dial. For all odd whole threads, the half-nuts must be engaged on alternate numbers of the threading dial, namely 1, 3 and 5, or 2, 4 and 6. For all fractional threads, the threading dial cannot be used; the half-nuts must be kept engaged.

DIAL INDICATOR CARRIAGE STOP

The stop assembly consists of an adjustable rod with micrometer stop #10 mounted at the front base of the headstock and dial indicator #11 mounted on the end face of the carriage apron. The dial indicator is graduated to register in thousandths.

ELECTRIC CARRIAGE CONTROL

This mechanism is used when chasing threads to control the travel of the carriage in either or both directions. Stops #19 are set for the desired travel of the carriage. Knurled screw #20 provides final adjustment. Work rotation is stopped automatically at each end of the carriage travel. The carriage travel is reversed by pushing the FORWARD or REVERSE push-button #25, or #26.

SPECIAL ENGLISH OR METRIC THREADS

Special threads not listed on chart #37 are cut using pick-off gears between headstock and gear box. Quadrant on which pick-off gears mount is located at the end of the end of the headstock and gear box. To gain across to quadrant remove guard #4 at left end of headstock and plate #1 at left end of gear box. To remove guard #4 first remove spindle handwheel assembly #3 which is held by nut and compression sleeve.

TAPER ATTACHMENT (optional)

The taper attachment when furnished is fastened to the rear and becomes a fixed part of the carriage. See Assembly Print #1020R-11. To set taper, loosen binder nuts #19A at each end of the slide, turn stud #5 until slide is at desired taper measured either in degrees or in inches per foot, lock binder nuts #19A.

Fasten clamp #25 to the rear of the bed and lock rod #1 between clamp and taper attachment lower slide. Loosen clamping nut #19B on the rear of the taper attachment top plate and tighten clamping bolt on the cross slide. Print 1020R part #32.

When the taper attachment is not in use the slide should be locked at zero taper and the rod #1 and clamp #25 which locks the taper attachment to the lathe bed should be removed. Tighten clamping nut #19B on the rear of the taper attachment top plate and loosen clamping bolt on the cross slide print 1020R-9A, part #32.

MAINTAINANCE INSTRUCTIONS

LUBRICATION

The headstock is automatically lubricated; however, care should be taken to maintain the oil at the level indicated by the guage glass on the front of the machine. To introduce oil to the headstock remove cover plate #38. Use filtered SAE-40 lubricating oil. The headstock should be drained and flushed once a year, the drain cock is located at the rear of the lathe.

The gear box is automatically lubricated; however, care should be taken to maintain the oil at the level indicated by the guage glass at the front of the lathe. To fill the gear box remove plate #1 at the left end of the lathe which gives access to a large filter cup. Use filtered SAE-40 lubricating oil. The gear box should be drained and flushed once a year. Use drain cock at the rear of the lathe.

The carriage is automatically lubricated by a pump driven by the feed rod. When starting machine after a prolonged shut-down, feed rod should be engaged by knob #30 (print 1020S) to insure lubrication of carriage before removing same. Carriage pump may be manually operated by placing knob #30 in neutral and turning feed rod by hand. Care should be taken to maintain the oil at the level indicated by the guage glass on the front of the apron. Use filtered SAE-40 lubricating oil. An oil cup adjacent to the guage glass on the front the apron is furnished for filling the reservoir. The carriage reservoir should be drained and flushed once a year, the drain plus is at the base of the apron.

The tailstock is provided with three oil cups one for each of the bedways and one for the spindle. Use filtered SAE-20 lubricating oil and apply once a week.

The U. S. Vari-drive requires periodic lubrication. See U. S. Vari-drive instruction sheet.

Motor has grease-packed ball bearings which should be re-lubricated once a year. A panel in the rear of the base at the tailstock gives access to the motor.

CARRIAGE GIB

The straight gib is adjusted with four gib screws with locking nuts to hold the adjustment. There should be a free sliding fit between the carriage gib and the hardened bed.

CROSS SLIDE GIB

This straight gib is adjusted with five gib screws having locking nuts to hold the adjustment.

COMPOUND SLIDE GIB

This straight gib is adjusted by three gib screws with locking nuts to hold the adjustment.

LEAD SCREW HALF-NUT GIB

From the right end of the carriage apron three gib screws with locking nuts can be adjusted to compensate the wear in the slide carrying the half-nuts.

LONGITUDINAL AND CROSS FEED CLUTCHES

A slotted nut on the front of each clutch housing adjusts the tension between the clutch faces. Clockwise adjustment of the slotted nut increased the clutch tension.

FEED ROD AND LEAD SCREW

End play may be adjusted. Adjustment on each is the same; remove the end-plate from the bearing housing at the right end of the bed and take up on the adjusting nuts. Lock the adjustment with leaf of winged washer and replace end plate.

CROSS SLIDE NUT

The back lash between the cross slide screw and nut can be adjusted to compensate for wear; see Assembly Print 1020F-9-1000 & 1020F-9A-1000. Lift hinged chip guard #1. Loosen check nut #28 and turn back-lash nut #27 until all play is removed between screw and nut. Lock adjustment with check nut #28.

For lathe with taper attachment see Assembly Print #1020F-9A-1000. Taper attachment connecting arm interferes with adjustment, therefore taper attachment and connecting arm must be removed. Thereafter the adjustment is the same as outlined in preceding paragraph.

COMPOUND SLIDE REST NUT

This nut is adjustable to compensate for wear; see assembly print 1020F-9-1000 and 1020F-9A-1000. Remove bearing collar #15 held by four Allen cap screws #17; push top-slide to the rear exposing feed screw and nut. Loosen check nut #28 and adjust the back-lash nut #48 by turning clockwise until all play between feed screw and feed screw nut is eliminated. Lock adjustment by tightening check nut #28.

MAIN DRIVE CLUTCH

The instructions for adjusting the multi-disc clutch are installation of new belts are detailed on varidrive sheet.

DRIVE BELTS

Two sets of three matched endless vee belts drive headstock. Each set of belts is individually tensioned by adjusting idler. Remove plate #1 at left-end of lathe to reach idlers.

MOTOR BRAKE

A Stearns magnetic disc brake is furnished for the main drive. The brake is an integral part of the motor. After prolonged use, slight wear of the brake linings may occur and require adjustment.

Brake is accessible through door at rear of base by sliding out coolant tank. Instructions for brake adjustment are found inside brake cover.

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Slide Rest	1020F-9-1000
Micro Gaging Dial	1020F-9U-1000
Idler	1020S-10A
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